

or more conditions of fluid in fluid conduits **135** at different locations over a period of time. For example, as shown in FIG. **5**, display **500** may chart water pressure levels at different locations in the fluid network, such as may be indicated on a map **605** of display **600** (FIG. **6**). The plotted pressure level data may indicate, for example as shown in display **500**, that a substantial and sustained change in pressure has occurred at one or more sensor locations, but not at others, suggesting that there may be a leak at a point in the fluid conduit network in the vicinity of the installations **100** for which the pressure drop was reported. Thus, the map-based display **600** can be shown in conjunction with the historical plots of one or more conditions to correlate the probable location of an event of interest indicated by the plotted condition data. By using such information from displays **500** and **600**, together with information about the known location of fluid supply conduits in the area, the likely origin of the suspected leak can be readily narrowed down to a small area, and possibly even a single conduit, which can be investigated relatively easily.

[0072] Displays **500** and **600** shown in FIGS. **5** and **6**, respectively, may be generated at client device **320**, **325** by a suitable software application executing on the client device **320**, **325**, such as a browser application executed by a processor of the client device **320**, **325** according to program code stored in the local storage accessible to that processor.

[0073] In some embodiments, telemetry unit **120** may be enabled for bidirectional communication with server **310**, so that firmware updates can be received and/or diagnostic testing can be performed remotely. In other embodiments, telemetry units **120** may be configured to only transmit data to server **310**, without receiving data or messages in return.

[0074] Fluid monitoring system **300** thus comprises a series of installations **100** located around an area or zone for which fluid flow in a conduit network is desired to be monitored. These installations communicate with server **310**, which in turn communicates with client devices **320**, **325** as necessary. Server **310** also tracks and stores historical data received from the installations **100** and processes the incoming and historical data according to rules stored in data store **315** to determine whether certain pre-defined events of interest may be occurring. Such events may be complex events and may be defined in the stored rules as such.

[0075] In order to optimally monitor and manage a particular fluid supply or drainage zone or zones, system **300** may have installations **100** positioned around the outside of the zone to sense conditions at the respective main inlet conduits of the fluid supply network for that zone. Together with a (possibly lesser) number of installations **100** located at other positions within the zone, a minimal number of installations can be used to effectively monitor the zone. In such embodiments, the installations **100** around the outside of the zone are configured with sensors **130**, **131** to monitor at least fluid flow and pressure and optionally also noise. The installations **100** that are at spaced locations more within the zone may be configured with sensors **130**, **131** to monitor at least fluid pressure and water quality and optionally also fluid flow and/or noise. For example, the five installations **100** represented by icons **610a-e** may be in a zone effectively defined roughly around the outside by the four installations **100** located at the positions of icons **610a**, **610b**, **610e** and **610c**, with the installation **100** located at the position of icon **610d** being an inner-zone installation that has a different set of fluid conditions to sense (e.g. including water quality).

[0076] In system **300**, each installation **100** may be configured with a unique set of operational parameters (i.e. alarm levels, sensor sampling times, reporting intervals, etc.) and may have a specific set of sensors **130**, **131**, depending on its position and monitoring role within the system **300** as a whole.

[0077] In some embodiments of system **300**, the telemetry unit **120** of each installation may be configured to send a message directly to a mobile communication device of an end user (i.e. client device **320**, **325**) when an alarm condition is determined by control module **229**. This may be instead of or in addition to sending the message to the server **310**.

[0078] Referring now to FIG. **4**, a method **400** of fluid monitoring by the telemetry unit **120** is shown and described in further detail. Method **400** is executed by the controller **220** of each telemetry unit **120** to control operation of the one or more sensors **130**, **131** configured to sense conditions of fluid in each fluid conduit **135** with which the respective telemetry unit **120** is associated.

[0079] At **410**, controller **220** waits a preconfigured time interval before switching power to the one or more sensors **130**, **131** at **415**. Once power is switched to the one or more sensors **130**, **131** at **415**, controller **220** waits a further period at **420** for the sensors to “warm-up”, for example by powering up their own internal electronics, **30** running their own operational diagnostics (if appropriate), and possibly indicating their operational state (e.g. properly operational or partially or fully non-operational).

[0080] Once the one or more sensors **130**, **131** have warmed-up and, assuming they are operational, the sensors **130**, **131** measure the relevant conditions and indicate at **425** a value of the condition they are configured to sense by providing a digital or analogue output signal to controller **220** via cable **125**. The output signals from sensors **130**, **131** are converted from analogue to digital signals, if appropriate, and then interpreted and stored by control module **229** in memory **227** for subsequent transmission to server **310**.

[0081] At **430**, once the sensor measurements (i.e. output signals) have been received from sensors **130**, **131**, control module **229** triggers switching control **232** to discontinue supply of power from power supply **230** to sensors **130**, **131**. Control module **229** then processes the data derived from the output signals to compare measured values to preconfigured alarm condition levels. If an alarm condition is detected, for example, because the sensed measurement exceeds or is equal to the alarm threshold for a particular sensor type, then control module **229** causes the antenna **235** to be turned on at **440** (for example, by causing power supply **230** to supply power to antenna **235**) and an appropriate message to be transmitted to server **310** at **445**. Steps **440** and **445** may also be performed to send a notification message where the lid sensor **114** detects the lid being opened or where some kind of fault in a sensor **130**, **131** or telemetry unit **120** is detected. The message sent to server **310** may include an identifier of the telemetry unit, a time stamp, an indication of one or more sensed values (if appropriate) and an alarm or notification type, for example.

[0082] If no alarm condition is detected at **435** and no other condition requires immediate notification, then the control module **229** waits at **450** until a preconfigured notification interval expires before next turning on the antenna at **440** and sending a message at **445** to server **310** including a batch of measurements taken at the measurement intervals. Meanwhile, until the notification interval expires at **450**, steps **410**